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DEFINING REQUIREMENTS FOR RADIOLOGICAL SENSORS AND ROBOTIC PLATFORM TECHNOLOGIES SPECIAL TECHNOLOGIES LABORATORY CHARACTERIZATION, MONITORING AND SENSOR TECHNOLOGY SUPPORT

TECHNOLOGY NEED

Task 1: The establishment of standards of quality for Office of Science and Technology (OST) programs will provide principal investigators, U.S. Department of Energy (DOE) customers, and DOE program reviewers with guidelines that can be used to evaluate existing and future OST proposals for quality and relevance.

Task 2: Identification of D&D measurements to be made and the platform and sensor problems associated with those measurements, and monitoring the appropriate sensor and platform technologies to ensure mutual compatibility will maximize the specificity of each to D&D measurements.

TECHNOLOGY DESCRIPTION

There is no single technology directly associated with this program since they are several and varied, and are associated with programs currently being monitored and assisted. As a result, the technology description is better replaced with a task description.

Task 1: A document for each new program is prepared in association with the principal investigator. It includes a detailed set of performance specifications for use in reviewing proposals for new and future projects, with each examined for both technical and management contents. New, experimental plans are evaluated for overall technical merit by matching proposed capabilities with requirements to estimate the probability of success. Similar proposals are screened for duplication.

For existing programs, low profile, on-site visits are made to increase the accuracy of technical assessments. Evaluation criteria for each of the programs are established to provide standards for performance comparisons. Sensors and related instrumentation are evaluated for performance expectation, while data processing algorithms are examined for technical merit.

Proposed experimental plans, which include schedules, milestones, cost estimates, objectives, and performance specifications, are reviewed for reality and consistency. These criteria are then used to determine if the measured values meet regulatory requirements, projected milestones have been reached, data are both reasonable and realistic, and the system is performing as expected.

Task 2: Reductions and cessations of activities at nuclear weapon production facilities have generated a need for D&D activities at those sites. Selections of appropriate sensors and sensor systems depend strongly on measurements to be made and robotic platforms under development. This program will monitor the progress of radiological sensor technology development as it applies to D&D requirements.

Results of measurements at selected sites are monitored to evaluate the effectiveness of the sensors in meeting requirements. Deficiencies are noted and analyzed to determine if new and different sensor systems may be required. The results are communicated to OST for review.

Because the D&D requirements are constantly changing, measurement technologies will have to respond accordingly. This program assists OST in monitoring the progress of design, development, and availability of new and innovative sensors and sensor systems. It also assists in testing and evaluation for reliability and applicability. Visits are made to D&D sites to observe measurements to be made and sensor systems to be used. Robotics/sensor system communications are evaluated and monitored to ensure coordinated development. Sensor developments are also monitored to assess their utility in current and future measurements.

BENEFITS

Task 1: The enhanced quality of the OST programs will provide DOE with improved guidelines for evaluating existing and future research and development (R&D) proposals. Improvements in data quality will provide savings in cost and time, and reductions in human risk and waste generation.

Task 2: The enhanced quality of the radiological sensors in D&D applications will provide DOE with improved cleanup capabilities. Depending on the specific programs under evaluation, these improvements will contribute to savings in cost and time, and reductions in human risk and waste generation.

COLLABORATION/TECHNOLOGY TRANSFER

Not applicable for either task.

ACCOMPLISHMENTS

- Developed of the radiological sensor for Site Characterization and Analysis Penetrometer System (SCAPS) to the level where it is ready for a full-scale demonstration.



TTP INFORMATION

Defining Requirements for Radiological Sensors and Robotic Platform Technologies Special Technologies Laboratory CMST Support technology development activities are funded under the following technical task plan (TTP):

TPP No. NV05C261 "Defining Requirements for Radiological Sensors and Robotic Platform Technologies Special Technologies Laboratory CMST Support"



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BIBLIOGRAPHY OF KEY PUBLICATIONS

None available at this time.